

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

CEQUENT PERFORMANCE
PRODUCTS, INC.,

Plaintiff,

Case No. 13-cv-15293
Hon. Matthew F. Leitman

v.

HOPKINS MANUFACTURING
CORPORATION *et al.*,

Defendants.

OPINION AND ORDER CONSTRUING
DISPUTED CLAIM LIMITATIONS

This is a patent infringement case. Plaintiff Cequent Performance Products, Inc. (“Cequent”) alleges that Defendant Hopkins Manufacturing Corporation (“Hopkins”) has infringed upon three of its patents: U.S. Patent Nos. (1) 6,068,352, entitled “Microprocessor-Based Control for Trailer Brakes” (“the ‘352 Patent”); (2) 6,012,780, entitled “Brake Controller for Trailer Brakes” (“the ‘780 Patent”); and (3) 6,445,993, entitled “Brake Control Unit” (“the ‘993 Patent”) (collectively, the “Patents”). The Patents are directed to electronic brake controllers that activate the brakes on a trailer being towed by a vehicle.

Cequent and Hopkins have now identified ten claim limitations from the Patents that are in dispute. (*See* ECF ## 42, 47.) In this Opinion and Order, the Court

will construe the disputed claim limitations pursuant to *Markman v. Westview Instruments*, 517 U.S. 370 (1996).

I

“The construction of claims is simply a way of elaborating the normally terse claim language[] in order to understand and explain, but not to change, the scope of the claims.” *Embrex, Inc. v. Service Engineering Corp.*, 216 F.3d 1343, 1347 (Fed. Cir. 2000) (quoting *Scripps Clinic & Research Found. v. Genentech, Inc.*, 927 F.2d 1565, 1580 (Fed. Cir. 1991)). The judge, not a jury, is to determine the meaning of the disputed claim limitations as a matter of law. *See Markman*, 517 U.S. at 372, 391.

The Federal Circuit has summarized the law of claim construction as follows:

Claim construction requires a determination as to how a person of ordinary skill in the art would understand a claim term in the context of the entire patent, including the specification. We begin a claim construction analysis by considering the language of the claims themselves. However, claims must be read in view of the specification, of which they are a part. The specification is the single best guide to the meaning of a disputed term, and is, thus, the primary basis for construing the claims. A court should also consider the patent's prosecution history, and may rely on dictionary definitions, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.

[....]

Phillips [v. *AWH Corp.*, 415 F.3d 1303, 1315 (Fed. Cir. 2005)] makes clear that the claims do not stand alone.

Rather they are part of a fully integrated written instrument, consisting principally of a specification that concludes with the claims. The only meaning that matters in claim construction is the meaning in the context of the patent.

Trustees of Columbia Univ. v. Symantec Corp., 811 F.3d 1359, 1362-63 (Fed. Cir. 2016) (internal punctuation and citations omitted).

II

In their claim-construction briefs (*see* ECF ## 42, 47), Cequent and Hopkins have requested that the Court construe ten claim limitations from the Patents: four from the ‘352 Patent, three from the ‘780 Patent, and three from the ‘993 Patent. The Court will address each claim limitation individually below.

A. The ‘352 Patent

1. Background on the ‘352 Patent

Many small trailers like campers or boat trailers use electronic brakes. (*See* Decl. of Dr. Mark N. Horenstein at ¶20, ECF #47-2 at 8, Pg. ID 1354.) It is important for these small trailers to have their own braking systems because “[w]ithout trailer brakes to supplement the brakes of the towing vehicle, the trailer could swerve or jackknife upon braking of the [towing] vehicle.” (*Id.* at ¶19, ECF #47-2 at 8, Pg. ID 1354.) The ‘352 Patent is directed to an electronic brake controller that uses a microcontroller in conjunction with analog circuit technology to control the brakes of a trailer that is being towed by an automobile.

2. “an input circuit . . .” of Claims 1, 19, and 64 of the ‘352 Patent

Hopkins requests that the Court construe the claim limitation “an input circuit for generating a brake level signal representing the braking force to be applied by the towed vehicle’s brakes” in Claims 1, 19, and 64 of the ‘352 Patent.

Claim 1 of the ‘352 Patent, representative of the asserted claims, is reproduced below with the disputed claim limitation bolded and underlined:

1. A brake controller for controlling the brakes of a towed vehicle, said brake controller comprising:

an input circuit for generating a brake level signal representing the braking force to be applied by the towed vehicle's brakes;

a display circuit including a plurality of indicator lights;

a power switching circuit and adapted for coupling to the brakes of the towed vehicle and to the power supply of the towing vehicle, for selectively supplying power from the towing vehicle power supply to the brakes of the towed vehicle in response to a switching control signal supplied to a control input terminal;

a current sensing circuit for sensing a level of braking current supplied to the brakes of the towed vehicle through said power switching circuit, and for generating a current level signal representing the sensed level of braking current; and

a microcontroller coupled to said input circuit, said display circuit, said current circuit, and to said power switching circuit, said microcontroller generating and supplying a switching control signal to said control input terminal of said power switching circuit thereby causing said power switching circuit to deliver a braking current to the brakes

of the towed vehicle that is related to the brake level signal supplied to said microcontroller by said input circuit, said microcontroller illuminating one or more of said indicator lights of said display circuit to indicate a relative level of braking of the towed vehicle brakes and controlling one or more of said indicator lights to indicate that the towed vehicle brakes are or are not properly connected to said power switching circuit.

(‘352 Pat. at col. 39, ll. 28-60, ECF # 38-6 at 63, Pg. ID 924; emphasis added.)

Cequent and Hopkins disagree about whether or not this claim limitation is a means-plus-function claim limitation pursuant to 35 U.S.C. § 112.

Hopkins argues that this claim limitation is a means-plus-function claim limitation. Hopkins asserts that the corresponding structure in the specification for this claim limitation is “a pendulum-style single axis decelerometer made of an infrared LED, a phototransistor, and a mechanical flag that modulates the LED’s light incident on the photoresistor to supply a single variable voltage to a pin of a microcontroller that directly corresponds to the magnitude of the current to be applied to the towed vehicles brakes. The function is to generate a signal that directly corresponds to the brake current amperage to be applied to the towed vehicle brakes.” (Hopkins Claim Const. Br. at 42-43, ECF #47 at 49-50, Pg. ID 1329-30.)

In contrast, Cequent argues that this claim limitation is not a means-plus-function claim limitation. Cequent also argues that this claim limitation does not need to be construed because the jury will understand its plain and ordinary meaning. In the alternative, Cequent argues that this claim limitation should be construed as

“an input circuit that is capable of creating a brake signal that represents the force to be applied by the trailer brakes.” (Cequent Claim Const. Br. at 11, ECF #42 at 14, Pg. ID 977.)

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent Proposal	Hopkins Proposal	Court’s Construction
“an input circuit for generating a brake level signal representing the braking force to be applied by the towed vehicle’s brakes”	No construction necessary; alternatively: an input circuit that is capable of creating a brake signal that represents the brake force to be applied by the trailer brakes.	This is a means-plus-function limitation. The patent discloses an analog circuit using a pendulum-style single axis decelerometer made of an infrared LED, a phototransistor, and a mechanical flag that modulates the LED’s light incident on the photoresistor to supply a single variable voltage to a pin of a microcontroller that directly corresponds to the magnitude of the current to be applied to the towed vehicles brakes. The function is to generate a signal that directly corresponds to the brake current amperage to be applied to the towed vehicle brakes.	This claim limitation is not a means-plus-function claim limitation. No further construction is necessary at this time. To the extent that a more nuanced construction is necessary in light of infringement or invalidity arguments being made in this case, the Court can address those issues at summary judgment or trial.

Means-plus-function claims are provided for in 35 U.S.C. § 112, ¶ 6:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material or acts in support thereof, and such claim shall be construed to cover the

corresponding structure, material, or acts described in the specification and equivalents thereof.

35 U.S.C. § 112, ¶ 6.¹

As mentioned above, the principal issue before the Court is whether this disputed claim limitation is a means-plus-function claim limitation. The Federal Circuit has explained the methodology a court should use when determining whether a disputed claim limitation is a means-plus-function claim limitation as follows:

Means-plus-function claim limitations, authorized by 35 U.S.C. § 112, ¶ 6, allow a patentee to draft claim terms as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof. But this flexibility in claim drafting comes at a price. Such claims are construed to cover only the structure, materials, or acts described in the specification as corresponding to the claimed function and equivalents thereof.

It is well settled that a claim limitation that actually uses the word ‘means’ invokes a rebuttable presumption that § 112, ¶ 6 applies. And, it is equally understood that a claim term that does not use ‘means’ will trigger the rebuttable presumption that § 112, ¶ 6 does not apply. But this presumption against the application of § 112, ¶ 6 to a claim term lacking the word ‘means’ can be overcome if a party can demonstrate that the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that

¹ The Leahy-Smith America Invents Act (the “AIA”), Pub. L. No. 112-29, 125 Stat. 284, 296-7, reorganized Section 112, effective September 16, 2012. Section 112, paragraph 6 was replaced by Section 112(f) for patent applications filed on or after September 16, 2012. Because the applications resulting in the Patents were filed before that date, the pre-AIA version of Section 112 applies here. *See Media Rights Techs., Inc. v. Capital One Fin. Corp.*, 800 F.3d 1366, 1371 n.1 (Fed. Cir. 2015).

function. In undertaking this analysis, we ask if the claim language, read in light of the specification, recites sufficiently definite structure to avoid § 112, ¶ 6.

Media Rights, 800 F.3d at 1371-72 (internal punctuation and citations omitted). A claim limitation may fail to recite sufficiently definite structure when it uses a generic placeholder or “nonce” word, similar to “means,” such as mechanism, element, device, or module. *MIT v. Abacus Software*, 462 F.3d 1344, 1354 (Fed. Cir. 2006).

The Court concludes that this disputed claim limitation is not a means-plus-function claim limitation. Turning first to the disputed claim language, the Court notes that the disputed claim limitation does not use the term “means.” Accordingly, there is a presumption that this claim limitation is not a means-plus-function claim limitation. *See Media Rights*, 800 F.3d at 1371 (“[I]t is equally understood that a claim term that does not use ‘means’ will trigger the rebuttable presumption that § 112, ¶ 6 does not apply”).

This presumption that the claim limitation is not means-plus-function can be overcome in certain circumstances. For example, the presumption can be overcome where a limitation “fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Media Rights*, 800 F.3d at 1372 (internal quotation marks omitted). “[T]o help determine whether a claim term recites sufficient structure, [the Court] examine[s] whether it

has an understood meaning in the art.” *Linear Tech. Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1320 (Fed. Cir. 2004). The Federal Circuit has recognized that the word “‘circuit’ by ‘itself connotes some structure.’” *Apex Inc. v. Raritan Computer Inc.*, 325 F.3d 1364, 1373 (Fed. Cir. 2004). In addition, “when the structure-connoting term ‘circuit’ is coupled with a description of the circuit’s operation, sufficient structural meaning generally will be conveyed to persons of ordinary skill in the art, and § 112, ¶ 6 presumptively will not apply.” *Linear Tech. Corp.*, 379 F.3d at 1320.

Here, the disputed claim limitation uses the term “circuit” and includes a description of the circuit’s operation. Specifically, the ‘352 Patent uses the adjective “input,” which modifies the word “circuit,” and it includes the additional descriptive language “for generating a brake level signal representing the braking force to be applied to the towed vehicle’s brakes.” These phrases narrow the claim limitation to specific types of circuits giving the claim limitation a sufficient structure. *See id.*; *see also Apex Inc.*, 325 F.3d at 1374 (holding that the claim limitation “interface circuit” was sufficient structure to avoid being a means-plus-function claim limitation because the adjective “interface” further defined the type of circuit claimed). Indeed, when the Federal Circuit has addressed similar “circuit” claim limitations, it has concluded that those claim limitations were not means-plus-function claim limitations. *See, e.g., Apex Inc.*, 325 F.3d at 1372; *Linear Tech. Corp.*,

379 F.3d at 1320; *Massachusetts Institute of Technology v. Abacus Software*, 462 F.3d 1344, 1355 (Fed. Cir. 2006).

Moreover, the ‘352 Patent uses the standard language “means for” when a means-plus-function claim limitation is desired. For example, in Claim 19, the ‘352 Patent provides that “malfunction monitoring *means for* monitoring the functioning of said microcontroller and resetting said microcontroller when a malfunction is detected.” (‘352 Pat. at col. 42, ll. 52-54, ECF #38-6 at 64, Pg. ID 925; emphasis added.) The use of the standard “means for” language in Claim 19 (and elsewhere in the ‘352 Patent) indicates that when the ‘352 Patent intends a means-plus function limitation, it uses the standard “means for” language. *See Karlin Tech., Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 972 (Fed. Cir. 1999) (“[D]ifferent words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope”). For all of these reasons, the Court concludes the presumption has not been overcome.

Hopkins resists this conclusion on two primary grounds. First, Hopkins insists that the line of the cases the Court relies upon above, including the *Linear* decision, are inapposite. According to Hopkins, these cases were decided under a now-overruled line of authority which held that the absence of the term “means” created a “strong” presumption against a finding of means-plus-function. *See, e.g., Lighting World, Inc. v. Birchwood Lighting, Inc.*, 382 F.3d 1354, 1358 (Fed. Cir. 2004)

(“[T]he presumption flowing from the absence of the term ‘means’ *is a strong one that is not readily overcome*”) (emphasis added). Hopkins says that in 2015, the Federal Circuit overruled *Lighting World* and reverted back to the standard rebuttable-presumption standard that existed before *Lighting World*. See *Williamson v. Citrix Online*, 792 F.3d 1339, 1348 (Fed. Cir. 2015) (en banc). But *Linear* is a pre-*Lighting World* decision that was decided under the same rebuttable-presumption standard that exists today under *Williamson*. Moreover, and in any event, there has *always* been a presumption that the absence of the word ‘means’ creates a rebuttable presumption that means-plus-function does not exist, and the Court would reach the same result here whether that presumption was “strong” or simply rebuttable. Finally, in *Media Rights* – a case decided after *Williamson* – the Federal Circuit noted that the term “circuit” does define structure. *Media Rights*, 800 F.3d at 1371-72. Thus, even after the Federal Circuit overruled the strong presumption standard from *Lighting World*, it still recognizes that the word “circuit” – which is used in the claim limitation in dispute here – connotes sufficient structure such that the rebuttable presumption against means-plus-function was not overcome.

Second, Hopkins attempts to avoid the Court’s construction through the submission of expert testimony from Dr. Horenstein supporting its position that the disputed claim limitation is a means-plus-function claim limitation. But such expert testimony is not as persuasive as the intrinsic evidence and supporting case law

discussed above. *See Phillips*, 415 F.3d at 1318 (“[C]onclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court. Similarly, a court should discount any expert testimony that is clearly at odds with the claim construction mandated by the claims themselves, the written description, and the prosecution history, in other words, with the written record of the patent”) (internal quotation marks omitted). Accordingly, for all of the reasons stated above, the Court holds that “input circuit . . .” is not a means-plus-function claim limitation.

3. **“current sensing circuit . . .” of Claims 1 and 44 of the ‘352 Patent**

Hopkins requests that the Court construe the claim limitation “a current sensing circuit for sensing a level of braking current supplied to the brakes of the towed vehicle through said power switching circuit, and for generating a current level signal representing the sensed level of braking current” in Claims 1 and 44 of the ‘352 Patent.

Claim 1 of the ‘352 Patent, representative of the asserted claims, is reproduced below with the disputed claim limitation bolded and underlined:

1. A brake controller for controlling the brakes of a towed vehicle, said brake controller comprising:

an input circuit for generating a brake level signal representing the braking force to be applied by the towed vehicle's brakes;

a display circuit including a plurality of indicator lights;

a power switching circuit and adapted for coupling to the brakes of the towed vehicle and to the power supply of the

towing vehicle, for selectively supplying power from the towing vehicle power supply to the brakes of the towed vehicle in response to a switching control signal supplied to a control input terminal;

a current sensing circuit for sensing a level of braking current supplied to the brakes of the towed vehicle through said power switching circuit, and for generating a current level signal representing the sensed level of braking current; and

a microcontroller coupled to said input circuit, said display circuit, said current circuit, and to said power switching circuit, said microcontroller generating and supplying a switching control signal to said control input terminal of said power switching circuit thereby causing said power switching circuit to deliver a braking current to the brakes of the towed vehicle that is related to the brake level signal supplied to said microcontroller by said input circuit, said microcontroller illuminating one or more of said indicator lights of said display circuit to indicate a relative level of braking of the towed vehicle brakes and controlling one or more of said indicator lights to indicate that the towed vehicle brakes are or are not properly connected to said power switching circuit.

(‘352 Pat. at col. 39, ll. 41-45, ECF #38-6 at 63, Pg. ID 924; emphasis added.)

Similar to the disputed “input circuit . . .” claim limitation discussed in subsection two above, the disagreement between the parties with respect to this claim limitation is whether or not it is a means-plus-function claim limitation pursuant to 35 U.S.C. § 112, ¶ 6. Likewise, the parties make generally the same arguments in support of their proposed claim constructions as they did for the “input circuit . . .” claim limitation.

Hopkins argues that this claim limitation is a means-plus-function claim limitation. Hopkins argues that the corresponding structure in the specification for the claim limitation is “a circuit comprising two amplifiers, and a network of resistors that sense current in the brakes of the towed vehicle and supplies a signal to a microcontroller having programming that calculates the magnitude of current in the towed vehicle brakes.” (Hopkins Claim Const. Br. at 48, ECF #47 at 55, Pg. ID 1335.)

Cequent argues that this claim limitation is not a means-plus-function claim limitation. Cequent also argues that this claim limitation does not need to be construed because the jury will understand its plain and ordinary meaning. In the alternative, Cequent argues that this claim limitation could be construed as “a circuit that senses the level of braking current supplied to the brakes of the towed vehicle through the power circuit, and for generating a current level signal that represents the sensed level of braking.” (Cequent Claim Const. Br. at 16, ECF #42 at 19, Pg. ID 982.)

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent Proposal	Hopkins Proposal	Court’s Construction
“a current sensing circuit for sensing a level of braking current supplied to the brakes of the towed vehicle through said power switching circuit, and for generating a current level signal representing the sensed level of braking current”	No construction necessary; alternatively: “a circuit that senses the level of braking current supplied to the brakes of the towed vehicle through the power circuit, and for generating a current level signal that represents the sensed level of braking.”	This is a means-plus-function limitation. The patent discloses a circuit comprising two amplifiers, and a network of resistors that sense current in the brakes of the towed vehicle and supplies a signal to a microcontroller having programming that calculates the magnitude of current in the towed vehicle brakes.	This is not a means-plus-function claim limitation. No further construction is necessary at this time. To the extent that a more nuanced construction is necessary in light of infringement or invalidity arguments being made in this case, the Court can address those issues at summary judgment or trial.

For many of the same reasons the Court held that the “input circuit . . .” claim limitation is not a means-plus-function claim limitation, the Court concludes that this disputed claim limitation is also not a means-plus-function claim limitation. The Court first notes that the disputed claim limitation does not use the term “means.” Accordingly, there is a presumption that this claim limitation is not a means-plus-function claim limitation.

The Court further concludes that the presumption has not been overcome because the disputed claim limitation has an understood meaning in the art to recite sufficiently definite structure. As discussed above, the Federal Circuit has held that the word “circuit” by itself connotes some structure. *See, e.g., Apex Inc.*, 325 F.3d at 1373. The disputed claim language also contains the adjective “current sensing” and other descriptive language further defining the operation of circuit. This claim language narrows the claim limitation to specific types of circuits giving the claim limitation a sufficient structure. *See id.*; *see also Linear Tech. Corp.*, 379 F.3d at 1320.

Finally, the Court notes as it did above that other claims in the ‘352 Patent use the standard language “means for” when a means-plus-function claim limitation is desired. (*See, e.g., ‘352 Pat.* at col. 42, ll. 52-54, ECF #38-6 at 64, Pg. ID 925.) The use of standard “means for” language in other claim limitations when a means-plus-function claim limitation is desired is intrinsic evidence that supports the Court’s conclusion that the disputed claim limitation – which does not use the standard “means for” language – is not intended to be a means-plus-function claim limitation. *See Karlin Tech., Inc., supra.*

In conclusion, the Court holds that this claim limitation is not a means-plus-function claim limitation.

4. “gain adjustment circuit . . .” in Claim 44

Hopkins requests that the Court construe the claim limitation “a gain adjustment circuit coupled to said manual input circuit and to said sensor input circuit for receiving brake level signals output therefrom that are indicative of a desired level of braking and for generating a gain-adjusted brake level signal in response to a brake level signal received from either said manual input circuit or said sensor input circuit” in Claim 44 of the ‘352 Patent.

Claim 44 of the ‘352 Patent is reproduced below with the disputed claim limitation bolded and underlined:

44. A brake controller for controlling the brakes of a towed vehicle, said brake controller comprising:

a brake light circuit adapted for coupling to a brake light of a towing vehicle for generating an output signal when the brake light is illuminated as a basis for determining that the brakes of the towing vehicle are actuated;

a sensor input circuit coupled to said brake light circuit for sensing the deceleration of the towing vehicle in response to said output signal from said brake light circuit;

a manual input circuit for receiving input from an operator of the towing vehicle of a desired braking force of the towed vehicle's brakes;

a gain adjustment circuit coupled to said manual input circuit and to said sensor input circuit for receiving brake level signals output therefrom that are indicative of a desired level of braking and for generating a gain-adjusted brake level signal in response to a brake level

signal received from either said manual input circuit or said sensor input circuit;

a power control circuit adapted for coupling to a power supply of the towing vehicle for supplying power to the brakes of the towed vehicle;

a power switching circuit coupled to said power control circuit and having a brake terminal adapted for coupling to the brakes of the towed vehicle, for selectively supplying power from said power control circuit to the brakes of the towed vehicle in response to a switching control signal supplied to a control input terminal;

a current sensing circuit for sensing a level of braking current supplied from said power control circuit to the brakes of the towed vehicle through said power switching circuit, and for generating a current level signal representing the sensed level of braking current;

a display circuit for displaying information to the operator of the towing vehicle;

a microcontroller coupled to said brake light circuit, said sensor input circuit, said manual input circuit, said gain adjustment circuit, said power control circuit, said power switching circuit, said current sensing circuit, and to said display circuit, said microcontroller adapted to generate and supply a switching control signal to said control input terminal of said power switching circuit thereby causing said power switching circuit to deliver a braking current to the brakes of the towed vehicle that is related to the gain-adjusted brake level signal supplied to said microcontroller by said gain adjusting circuit.

(‘352 Pat. at col. 45-46, ll. 57-39, ECF #38-6 at 66, Pg. ID 927; emphasis added.)

Just as with the two disputed claim limitations discussed in sub-sections two and three above, the disagreement between the parties with this claim limitation is

whether or not this claim limitation is a means-plus-function limitation pursuant to 35 U.S.C. § 112, ¶ 6.² The parties also make generally the same arguments in support of their proposed claim constructions as they did for the “input circuit . . .” and “current sensing circuit . . .” claim limitations.

Hopkins argues that this claim limitation is a means-plus-function claim limitation. Hopkins further argues that the corresponding structure in the specification for the claim limitation is “an analog circuit comprising three resistors, a capacitor, an amplifier and potentiometer that supplies a variable voltage based upon the variable resistance of the potentiometer based upon a time constant defined by the resistors and capacitor that are amplified by the amplifier. The circuit is coupled to both the manual input circuit and sensor input circuit. The function is to adjust the gain on a signal from both the manual input circuit and the sensor input circuit.” (Hopkins Claim Const. Br. at 50-51, ECF #47 at 57-58, Pg. ID 1337-38.)

Cequent argues that this claim limitation is not a means-plus-function claim limitation. Cequent also argues that this claim limitation does not need to be construed because the jury will understand its plain and ordinary meaning. In the alternative, Cequent argues that this claim limitation could be construed as “a circuit

² Hopkins asserts in its response brief that the parties dispute the meaning of “and” in this claim limitation; however, in Cequent’s reply brief, it says it agrees with Hopkins’ proposed meaning of the word “and.” (See Cequent Reply Br. at 13, ECF #53 at 15, Pg. ID 1756.) Therefore, the meaning of “and” is not in dispute.

that receives input from the manual input circuit or the sensor input circuit and, in response, creates a gain adjustment brake level signal.” (Cequent Claim Const. Br. at 18, ECF #42 at 21, Pg. ID 984.)

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent’s Proposed Construction	Hopkins Proposed Construction	Court’s Construction
“a gain adjustment circuit coupled to said manual input circuit and to said sensor input circuit for receiving brake level signals output therefrom that are indicative of a desired level of braking and for generating a gain-adjusted brake level signal in response to a brake level signal received from either said manual input circuit or said sensor input circuit”	No construction necessary; alternatively: “a circuit that receives input from the manual input circuit or the sensor input circuit and, in response, creates a gain adjustment brake level signal.”	This is a means-plus-function limitation. The patent discloses an analog circuit comprising three resistors, a capacitor, an amplifier and potentiometer that supplies a variable voltage based upon the variable resistance of the potentiometer based upon a time constant defined by the resistors and capacitor that are amplified by the amplifier. The circuit is coupled to both the manual input circuit and sensor input circuit. The function is to adjust the gain on a signal from both the manual input circuit and the sensor input circuit.	This is not a means-plus-function claim limitation. No further construction is necessary at this time. To the extent that a more nuanced construction is necessary in light of infringement or invalidity arguments being made in this case, the Court can address those issues at summary judgment or trial.

For generally the same reasons discussed above with respect to the “input circuit . . .” and “current sensing circuit” claim limitations, the Court concludes that the disputed claim limitation is not a means-plus-function claim limitation. The Court again notes that the disputed claim limitation does not use the term “means.” Accordingly, there is a presumption that this claim limitation is not a means-plus-function claim limitation. And, as above, the presumption has not been overcome here because the disputed claim limitation has an understood meaning in the art to recite sufficiently definite structure. In addition to using the term “circuit,” which connotes structure, *see, e.g., Apex Inc.*, 325 F.3d at 1373, the disputed claim language also contains the adjective “gain adjustment” and other descriptive language further defining the operation of circuit. For example, the claim limitation describes the operation of the circuit as “generating a gain-adjusted brake level signal in response to a brake level signal received from either said manual input circuit or said sensor input circuit.” This claim language narrows the claim limitation to specific types of circuits giving the claim limitation a sufficient structure. *See id.*; *see also Linear Tech. Corp.*, 379 F.3d at 1320.

Finally, the Court again notes that the use of standard “means for” language in other claim limitations when a means-plus-function claim limitation is desired is intrinsic evidence that supports the Court’s conclusion that the disputed claim

limitation – which does not use this standard “means for” language – is not intended to be a means-plus-function claim limitation. *See Karlin Tech., Inc., supra.*

In conclusion, the Court holds that this claim limitation is not a means-plus-function claim limitation.

5. “said microcontroller varying the duty cycle . . .” in Claim 64

Hopkins requests that the Court construe the claim limitation “said microcontroller varying the duty cycle of the pulse width modulated control signal in response to the brake level signal” in Claim 64 of the ‘352 Patent.

Claim 64 of the ‘352 Patent is reproduced below with the disputed claim limitation bolded and underlined:

64. A brake controller for controlling the brakes of a towed vehicle, said brake controller comprising:

an input circuit for generating a brake level signal representing the braking force to be applied by the towed vehicle's brakes;

a power switching circuit adapted for coupling to the brakes of the towed vehicle and to the power supply of the towing vehicle, for selectively supplying power from the towing vehicle power supply to the brakes of the towed vehicle in response to a pulse width modulated control signal supplied to a control input terminal whereby the braking current supplied to the towed vehicle brakes corresponds to a duty cycle of the pulse width modulated control signal; and

a microcontroller coupled to said input circuit and to said power switching circuit, said microcontroller generating and supplying the pulse width modulated control signal to

said control input terminal of said power switching circuit, **said microcontroller varying the duty cycle of the pulse width modulated control signal in response to the brake level signal** supplied to said microcontroller by said input circuit to thereby cause said power switching circuit to deliver a braking current to the brakes of the towed vehicle that corresponds to the desired level of braking.

(‘352 Pat. at col. 48-49, ll. 64-3, ECF #38-6 at 67-68, Pg. ID 928-29; emphasis added.)

Hopkins argues that this claim limitation should be construed as “changing the percentage time the control signal is high based directly upon the variable voltage produced by the signal axis accelerometer.” (Hopkins Claim Const. Br. at 53, ECF #47 at 60, Pg. ID 1340.)

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues, if the Court believes a construction for this claim limitation is needed, that this claim limitation should be construed as “the microcontroller changes a parameter of the pulse width modulated control signal in response to the brake level signal supplied to the microcontroller.” (Cequent Claim Const. Br. at 20, ECF #42 at 23, Pg. ID 986.)

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent's Proposed Construction	Hopkins Proposed Construction	Court's Construction
"said microcontroller varying the duty cycle of the pulse width modulated control signal in response to the brake level signal"	No construction necessary; alternatively: "the microcontroller changes a parameter of the pulse width modulated control signal in response to the brake level signal supplied to the microcontroller"	"Changing the percentage time the control signal is high based directly upon the variable voltage produced by the single axis accelerometer"	No construction necessary at this time.

The disputed claim language can be separated into two phrases: (1) "varying the duty cycle of the pulse width modulated control signal" and (2) "in response to the brake level control signal."

As to the first phrase, "varying the duty cycle of the pulse width modulated control signal," Cequent and Hopkins agree that this phrase means "modulating the widths of pulses." (*See* Cequent Reply Br. at 14, ECF #53 at 16, Pg. ID 1757; Hopkins Claim Const. Br. at 54, ECF #47 at 61, Pg. ID 1341.) Accordingly, the Court does not need to construe this first phrase.

As to the second phrase, "in response to the brake level signal," Hopkins argues this claim language should be construed to mean "based directly upon the variable voltage produced by the signal axis accelerometer." (Hopkins Claim Const. Br. at 53, ECF #47 at 60, Pg. ID 1340.) Hopkins explains that its proposed

construction is based on its previous argument that the claim limitation “input circuit . . .” should be construed as a means-plus-function claim limitation. If the claim limitation “input circuit” is interpreted as a means function claim limitation, Hopkins argues that the specification discloses a single-axis, pendulum-type accelerometer and that the output of a signal axis accelerometer is necessarily a variable voltage. Accordingly, Hopkins argues that the claim language should be limited to the embodiment disclosed in the specification and equivalents thereof pursuant to 35 U.S.C. § 112, ¶ 6.

The Court rejects Hopkins’ proposed construction because it rests on its previous argument that the “input circuit . . .” claim language is a means-plus-function claim limitation. Because the Court has already held that the “input circuit . . .” is not a means-plus-function claim limitation, it would be improper to import examples from the written description section of the patent into the claims. *See Phillips*, 415 F.3d at 1323 (“[W]e have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment”). Moreover, the Court also holds that the disputed claim language “in response to the brake level signal” is clear and would be understandable by a jury. Accordingly, the Court finds that the second phrase of this disputed claim limitation does not need to be construed at this time.

B. The ‘780 Patent

1. Background on the ‘780 Patent

The ‘780 Patent is directed to “a new and improved brake control system for controlling the brakes on a trailer being towed by a towing vehicle.” (‘780 Pat. at col. 1, ll. 23-25, ECF #38-7 at 4, Pg. ID 935.) More specifically, the ‘780 Patent is directed to an electronic brake controller that senses inclination and deceleration of the towing vehicle and compensates trailer braking based on the inclination and deceleration that was sensed. (*See id.* at col. 4, ll. 7-25, ECF #38-7 at 5, Pg. ID 936.) By sensing the inclination, the controller is able to compensate for uphill and downhill operating conditions by braking the trailer more going downhill and less when going uphill. (*See id.*) The trailer brake controller also provides for more trailer braking when more vehicle deceleration is sensed. (*See id.*)

2. “sensing inclination . . .” in Claim 1 of the ‘780 Patent

Hopkins requests that the Court construe the claim limitation “sensing inclination of one of the towing vehicle and the trailer” in Claim 1 of the ‘780 Patent.

Claim 1 of the ‘780 Patent is reproduced below with the disputed claim limitation bolded and underlined:

1. A method for controlling brakes on a trailer being towed by a towing vehicle, comprising:

sensing rate of deceleration of one of the towing vehicle and the trailer;

sensing inclination of one of the towing vehicle and the trailer;

generating a variable deceleration signal as a function of said rate of deceleration and a variable inclination signal as a function of said sensed inclination;

sending a brake amperage output signal to control the brakes on the trailer; and

continuously proportioning said brake amperage output signal in accordance with both said deceleration and said inclination signals.

(*Id.* at col. 5, ll. 53-67, ECF #38-7 at 6, Pg. ID 937; emphasis added.)

Hopkins argues that this claim limitation should be construed as “[d]etecting the magnitude of incline of either the towing vehicle or the trailer with respect to the horizon from a signal that is separate and distinct from a signal carrying deceleration information, the inclination signal containing no deceleration information and is not a component of a signal carrying other information, such as deceleration information.” (Hopkins Claim Const. Br. at 11, ECF #47 at 18, Pg. ID 1298.)

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues, if the Court believes a construction for this claim limitation is needed, that this claim limitation should be construed as “sensing inclination of either the towing vehicle, the trailer, or both.” (Cequent Claim Const. Br. at 24, ECF #42 at 27, Pg. ID 990.)

In the table below, the Court summarizes these two competing positions and summarizes the Court's construction of this disputed claim limitation:

Claim Limitation	Cequent's Construction	Hopkins Construction	Court's Construction
"sensing inclination of one of the towing vehicle and the trailer"	No construction necessary; alternatively: "sensing inclination of either the towing vehicle, the trailer, or both."	"Detecting the magnitude of incline of either the towing vehicle or the trailer with respect to the horizon from a signal that is separate and distinct from a signal carrying deceleration information, the inclination signal containing no deceleration information and is not a component of a signal carrying other information, such as deceleration information."	"sensing the magnitude of inclination of the towing vehicle, the trailer, or both"

The parties agree that the claim language "of one of the towing vehicle and the trailer" can be construed to mean "of the towing vehicle, trailer, or both." The principal disagreement between the parties is whether the claim language "sensing inclination" should be construed to mean (1) sensing the "magnitude" of the inclination or (2) sensing only the fact of inclination.

The Court concludes that the claim language “sensing inclination of one of the towing vehicle and the trailer” means sensing the “magnitude” of the inclination of the towing vehicle, the trailer, or both. Indeed, a key purpose of the invention is to sense the magnitude of the inclination and then compensate the trailer braking accordingly. Only by sensing the magnitude of inclination is the controller able to compensate for the extent of the downhill operating condition by braking the trailer with the specific amount of force appropriate for the particular condition. (*See* ‘780 pat. at col. 4, ll. 7-25, ECF #38-7 at 5, Pg. ID 936.)

The written description of the ‘780 Patent also supports the Court’s conclusion. *See Phillips*, 415 F.3d at 1317 (“It is therefore entirely appropriate for a court, when conducting claim construction, to rely heavily on the written description for guidance as to the meaning of the claims”). The written description then provides that “[t]he controller [] is programmed so as to only provide a brake amperage output signal along line [] *proportionate to the sensed inclination and rate of deceleration* when the towing vehicle brakes have been engaged or activated.” (‘780 Patent at col. 4, ll. 42-46, ECF #38-7 at 5, Pg. ID 936; emphasis added.) In order for the controller to provide a signal that is “proportionate to the sensed inclination,” the controller must have information concerning the magnitude of the inclination. Indeed, the controller could not “proportion” the output signal if the controller simply had information indicating the fact that the vehicle was inclined.

The text surrounding the disputed claim limitation contains additional evidence supporting the Court’s conclusion. *See ACTV, Inc. v. Walt Disney Co.*, 346 F.3d 1082, 1088 (Fed. Cir. 2003) (“While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered in determining the ordinary and customary meaning of those terms”). The claim limitation that immediately follows the disputed claim limitation provides that “generating a variable deceleration signal as a function of said rate of deceleration and a variable inclination signal as a function of said sensed inclination.” (‘780 Patent at col. 5, ll. 59-62, ECF #38-7 at 6, Pg. ID 937.) The invention could only generate a “variable inclination signal as a function of said sensed inclination” if it sensed the magnitude of the inclination – otherwise, the signal would not be “variable.”

The Court further concludes that the additional language proposed by Hopkins is not needed and would be confusing to a jury. Accordingly, the Court holds that the claim limitation “sensing inclination of one of the towing vehicle and the trailer” should be construed to mean “sensing the magnitude of inclination of the towing vehicle, the trailer, or both.”

3. “sending a brake amperage output signal” in Claim 1 of the ‘780 Patent

Hopkins requests that the Court construe the claim limitation “sending a brake amperage output signal” in Claim 1 of the ‘780 Patent.

Claim 1 of the '780 Patent is reproduced below with the disputed claim limitation bolded and underlined:

1. A method for controlling brakes on a trailer being towed by a towing vehicle, comprising:

sensing rate of deceleration of one of the towing vehicle and the trailer;

sensing inclination of one of the towing vehicle and the trailer;

generating a variable deceleration signal as a function of said rate of deceleration and a variable inclination signal as a function of said sensed inclination;

sending a brake amperage output signal to control the brakes on the trailer; and

continuously proportioning said brake amperage output signal in accordance with both said deceleration and said inclination signals.

('780 Pat. at col. 5, ll. 53-67, ECF #38-7 at 6, Pg. ID 937; emphasis added.)

Hopkins argues that this claim limitation should be construed as “supplying a calculated current amperage, calculated during the continuously proportioning step, to control the trailer brakes.” (Hopkins Claim Const. Br. at 15, ECF #47 at 22, Pg. ID 1302.)

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues that, if the Court believes a construction for this claim limitation is needed, this claim limitation should be construed as “sending an

electrical signal to control the trailer brakes.” (Cequent Claim Const. Br. at 29, ECF #42 at 32, Pg. ID 995.)

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent’s Construction	Hopkins’ Construction	Court’s Construction
“sending a brake amperage output signal”	No construction necessary; alternatively: “sending an electrical signal to control the trailer brakes”	“Supplying a calculated current amperage, calculated during the continuously proportioning step, to control the trailer brakes”	No construction necessary at this time.

There are three disagreements between the parties: (1) whether the word “current” should be added or substituted for “amperage;” (2) whether this claim language should be construed to require that the output signal must be “calculated;” and (3) whether this claim language requires that this calculation occur “during the continuously proportioning step.”

The Court first concludes that the word “current” does not need to be added or substituted for the word “amperage.” An “ampere” is simply the unit of measurement for current, and courts have previously equated the word “amperage” with the term “flow of current.” *See, e.g., U.S. v. G. L. Elects., Inc.*, 49 C.C.P.A. 111, 113 (CCPA 1962) (“We can further assume that *to measure amperage is to measure the rate of flow of an electric current* and that, in that sense at least, an ammeter

measures ‘flow’”) (emphasis added). Moreover, both Hopkins and Cequent appear to agree that amperage refers to current. (*See* Cequent Reply Br. at 21, ECF #53 at 23, Pg. ID 1764; *see also* Hopkins Resp. Br. at 17-18, ECF #47 at 24-25, Pg. ID. 1304-1305.) Thus, because the “ordinary” and “widely accepted” meaning of the word ‘amperage’ refers to current, the Court need not add a reference to ‘current’ to the claim limitation. *Phillips*, 415 F.3d at 1314 (“In some cases, the ordinary meaning of claim language as understood by a person of ordinary skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than the application of the widely accepted meaning of commonly understood words”).

As to Hopkins’ proposal to construe this claim limitation to require that the output signal must be “calculated” and that the calculation occur “during the continuously proportioning step,” the Court concludes that it would be improper to narrow the claim language as Hopkins proposes. Claim 1 of the ‘780 Patent does not contain a “calculation” step. It would therefore be improper for the Court to import limitations from the written description into the claim. *See Phillips*, 415 F.3d at 1323 (“[W]e have expressly rejected the contention that if a patent describes only a single embodiment, the claims of the patent must be construed as being limited to that embodiment”).

In conclusion, the Court holds that the claim limitation does not need to be construed at this time.

4. “continuously proportioning . . .” in Claim 1 of the ‘780 Patent

Hopkins requests that the Court construe the claim limitation “continuously proportioning said brake amperage output signal in accordance with both said deceleration and said inclination signals” in Claim 1 of the ‘780 Patent.

Claim 1 of the ‘780 Patent is reproduced below with the disputed claim limitation bolded and underlined:

1. A method for controlling brakes on a trailer being towed by a towing vehicle, comprising:

sensing rate of deceleration of one of the towing vehicle and the trailer;

sensing inclination of one of the towing vehicle and the trailer;

generating a variable deceleration signal as a function of said rate of deceleration and a variable inclination signal as a function of said sensed inclination;

sending a brake amperage output signal to control the brakes on the trailer; and

continuously proportioning said brake amperage output signal in accordance with both said deceleration and said inclination signals.

(‘780 Pat. at col. 5, ll. 53-67, ECF #38-7 at 6, Pg. ID 937; emphasis added.)

Hopkins argues that this claim limitation should be construed as “the entire time trailer braking is desired, calculating a continuous amperage of the output signal required to control the brakes based upon both the deceleration and inclination signals.” (Hopkins Claim Const. Br. at 19, ECF #47 at 26, Pg. ID 1306.)

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues, if the Court believes a construction for this claim limitation is needed, that this claim limitation should be construed as “continuously adjusting the signal to the brakes based on both the deceleration and inclination signals.” (Cequent Claim Const. Br. at 31, ECF #42 at 34, Pg. ID 997.)

There are two disagreements between the parties: (1) what is the meaning of the word “continuously;” and (2) whether the Court’s construction should include a “calculating” step.

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent’s Construction	Hopkins’ Construction	Court’s Construction
“continuously proportioning said brake amperage output signal in accordance with both said deceleration and said inclination signals”	No construction necessary; alternatively: “continuously adjusting the signal to the brakes based on both the deceleration and inclination signals”	“The entire time the claimed deceleration and inclination are being received, calculating a continuous amperage of the output signal required to control the brakes based upon both the deceleration and inclination signals”	“adjusting the amperage output signal sent to the brakes without interruption the entire time that deceleration and inclination signals are received.”

As to the first issue, Hopkins argues that the Court should construe the word “continuously” to mean “the entire time the claimed deceleration and inclination signals are being received.” (Hopkins Supp. Claim Constr. Br. at 10, ECF #58 at 11, Pg. ID 2104.) In contrast, Cequent contends that the word “continuously” only means that the brake amperage output signal is adjusted repeatedly or without interruption, but it does not require that the adjusting of the brake signal be the entire time that braking is desired or the entire time that the deceleration and inclination signals are received. (*See* Cequent Supp. Claim Const. Br. at 1-6, ECF #57 at 2-7, Pg. ID 2055-60.)

The Court concludes that the word “continuously” in the context of the ‘780 Patent means “adjusting the amperage output signal sent to the brakes without interruption the entire time that deceleration and inclination signals are received.”

This construction of “continuously” is most consistent with its ordinary meaning. The word “continuously” describes events “that are uninterrupted in time, substance, extent; ceaseless.” *See* Writing Explained, <http://writingexplained.org/continually-vs-continuously-difference>. *See also* *Chicago Mercantile Exch., Inc. v. Technology Research Group, LLC*, 789 F. Supp.2d 986, 993 (N.D. Ill. 2011) (“With the aid of these [dictionary] definitions, the Court concludes that the word “continuously” in this context means ‘without interruption or break for a period of time’”); *Ronald A. Smith & Assocs. v.*

Hutchinson Tech. Inc., 2002 WL 34691122, *6 (N.D. Cal. 2002) (“Thus, the plain and ordinary meaning of ‘continuously’ is ‘without interruption’”); *Curtiss-Wright Flow Control Corp. v. Velan, Inc.*, 2006 WL 62092221, *15 (W.D. Tex. 2006) (“The term ‘continuously’ commonly means constant or uninterrupted”). This construction is also consistent with the written description of the ‘780 Patent which provides that the invention provides the desired amount of braking “*at all times*” and makes “real time” adjustments for inclination. (‘780 pat. at col. 3, ll. 7-11 and col. 4 ll. 22-25, ECF #38-7 at 5, Pg. ID 936; emphasis added.)

Cequent insists that “continuously” in this context does not mean the entire time trailer braking is desired, but need only be continuous when the “brake amperage output signal is adjusted.” (Cequent Supp. Br. at 1, ECF #57 at 2, Pg. ID 2055.) But this construction allows for a short gap between the time the brakes are engaged and when the braking output signal is adjusted. Such a gap is not consistent with the ordinary understanding of the word “continuously.”

As to the second issue, whether this claim limitation should be construed to require a “calculating” step as Hopkins proposes – specifically “calculating a continuous amperage of the output signal required to control the brakes based upon both the deceleration and inclination signals” – Hopkins argues that the calculation must occur in order to proportion the brake output signal. In response, Cequent maintains that the claim does not require a calculating step and such a step should

not be read into the claim. The Court concludes that the claim language does not set forth a calculation step. Accordingly, the Court will not construe the claim language to require a “calculation” step at this time.

In conclusion, the Court construes the “continuously proportioning said brake amperage output signal in accordance with both said deceleration and said inclination signals” to mean “adjusting the amperage output signal sent to the brakes without interruption the entire time that deceleration and inclination signals are received.”

C. The ‘993 Patent

1. Background on the ‘993 Patent

The ‘993 Patent is directed *inter alia* to an electronic trailer brake controller that eliminates the need to manually “level” the brake control unit when the brake control unit is initially mounted and installed in the vehicle. Prior art brake controllers typically required a vehicle operator to “set or adjust, by mechanical means, a reference level of the accelerometer[,] when the brake control unit was initially mounted or changed to a different mounting orientation.” (‘993 Pat. at col. 1 ll. 33-37, ECF #38-5 at 9, Pg. ID 856.)

2. “brake control signal” in Claim 1 of the ‘993 Patent

Hopkins requests that the Court construe the claim limitation “brake control signal” in Claim 1 of the ‘993 Patent.

Claim 1 of the '993 Patent is reproduced below with the disputed claim limitation bolded and underlined:

1. A brake control unit for providing a brake output signal to a brake load of a towed vehicle, comprising:

a processor;

an accelerometer coupled to the processor, the accelerometer providing **a brake control signal** to the processor, wherein the processor is programmed to cause an appropriate brake output signal to be provided to the brake load responsive to the brake control signal;

and a memory subsystem coupled to the processor, the memory subsystem storing processor executable code which causes the processor to automatically acquire an operating point of the brake control signal when the brake control unit is mounted within a range of operating positions.

(*Id.* at col. 10, ll. 5-23, ECF #38-5 at 13, Pg. ID 860; emphasis added.)

Hopkins argues that this claim limitation should be construed as “an instantaneous voltage developed by the single axis accelerometer directly representing the magnitude of deceleration in the direction of travel.” (Hopkins Claim Const. Br. at 26, ECF #47 at 34, Pg. ID 1314.)

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues, if the Court believes a construction for this claim limitation is needed, that this claim limitation should be construed as “the signal that the accelerometer provides.” (Cequent Claim Const. Br. at 34, ECF #42 at 37, Pg.

ID 1000.) Cequent insists that Hopkins’ proposed construction is improper because it improperly imports at least four different limitations into the claims: (1) that the accelerometer be a “single-axis” accelerometer; (2) that the signal be a “voltage” signal; (3) that the voltage be “instantaneous;” and (4) that the voltage “directly” represent the magnitude of deceleration in the direction of travel. (*See id.* at 36, ECF #42 at 39, Pg. ID 1002.)

In the table below, the Court summarizes these two competing positions and summarizes the Court’s construction of this disputed claim limitation:

Claim Limitation	Cequent’s Proposed Construction	Hopkins’ Proposed Construction	Court’s Construction
“brake control signal”	No construction necessary; alternatively: “the signal that the accelerometer provides”	“an instantaneous voltage developed by the single axis accelerometer directly representing the magnitude of deceleration in the direction of travel”	No construction necessary.

The Court concludes that the claim limitation “a brake control signal” does not need further construction. As noted above, “[i]n some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves little more than application of widely accepted meaning of commonly understood

words.” *Phillips*, 415 F.3d at 1314. This is one such claim limitation. Moreover, the claim language in dispute was intentionally written to be broad. It would be improper to import features of example embodiments from the written description into the claim without a clear disavowal or disclaimer of broad claim scope. *See id.* at 1323 (“[A]lthough the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments”).

3. **“automatically acquiring an operating point” in Claim 1 of the ‘993 Patent**

Hopkins requests that the Court construe the claim limitation “automatically acquire an operating point of the brake control signal” in Claim 1 of the ‘993 Patent.

Claim 1 of the ‘993 Patent is reproduced below with the disputed claim limitation bolded and underlined:

1. A brake control unit for providing a brake output signal to a brake load of a towed vehicle, comprising:

a processor;

an accelerometer coupled to the processor, the accelerometer providing a brake control signal to the processor, wherein the processor is programmed to cause an appropriate brake output signal to be provided to the brake load responsive to the brake control signal;

and a memory subsystem coupled to the processor, the memory subsystem storing processor executable code which causes the processor to **automatically acquire an operating point of the brake control signal** when the

brake control unit is mounted within a range of operating positions.

(‘993 Pat. at col.10, ll. 5-23, ECF #38-5 at 13, Pg. ID 860; emphasis added.)

Hopkins argues that this claim limitation should be construed as “the microprocessor determines the reference level voltage of the brake control signal based on one or more voltage values obtained from a time other than during braking.” (Hopkins Claim Const. Br. at 29, ECF #47 at 36, Pg. ID 1316.)

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues, if the Court believes a construction for this claim limitation is needed, that this claim limitation should be construed as “a value representing accelerometer output during a period other than during a braking event.” (Cequent Claim Const. Br. at 37, ECF #42 at 40, Pg. ID 1003.)

In the table below, the Court summarizes these two competing positions and summarizes the Court's construction of this disputed claim limitation:

Claim Limitation	Cequent's Proposed Construction	Hopkins' Proposed Construction	Court's Construction
"automatically acquire an operating point of the brake control signal"	No construction necessary; alternatively: "a value representing accelerometer output during a period other than during a braking event."	"The microprocessor determines the reference level voltage of the brake control signal based on one or more voltage values obtained from a time other than during braking."	<p>"Obtain by processor operation an operating point of the signal provided by the accelerometer, where 'operating point' is a value representing the level or magnitude of the accelerometer output at a time other than during a braking event.</p> <p>'Acquir[ing] an operating point' encompasses reading a single value of the accelerometer output as well as calculating or otherwise determining a value based on multiple readings of the accelerometer output."</p>

On July 28, 2016, the United States Patent and Trademark Office (the "USPTO") issued its final decision in an *inter partes review* proceeding concerning the '993 Patent (the "IPR Final Written Decision"). In the IPR Final Written Decision, the USPTO concluded that Claims 1, 2, 4, 5, 14, 15, 17, 18, 27, 28, 30 and 31 of the '993 Patent were invalid as being anticipated or obvious based on prior art. In reaching this conclusion, the USPTO construed "automatically acquire an

operating point of the brake control signal” to mean:

[O]btain by processor operation an operating point of the signal provided by the accelerometer, where ‘operating point’ is a value representing the level or magnitude of the accelerometer output at a time other than during a braking event. “Acquir[ing] an operating point” encompasses reading a signal value of the accelerometer output as well as calculating or otherwise determining a value based on multiple readings of the accelerometer output.

(*IPR Final Written Decision ‘993 Pat.* at 17-18, *Hopkins Mfg. Corp. v. Ceuquant Performance Prods., Inc.*, Case IPR2015-00609.)

The Court concludes that the USPTO’s claim construction of the ‘993 Patent in the IPR Final Written Decision is well reasoned. Although the Court acknowledges that the USPTO construes claim limitations under a “broadest reasonable construction” standard, while district courts apply a plain and ordinary meaning standard, the Court does not feel that the different standards lead to a different result for this particular claim limitation. *See Cuozzo Speed Techs. LLC v. Lee*, 136 S. Ct. 2131, 2144-46 (2016). Accordingly, the Court adopts the construction set forth by the USPTO in the IPR Final Written Decision.

4. “mounted within a range of operating positions” in Claim 1 of the ‘993 Patent

Hopkins requests that the Court construe the claim limitation “when the brake control unit is mounted within a range of operating positions” in Claim 1 of the ‘993 Patent.

Claim 1 of the '993 Patent is reproduced below with the disputed claim limitation bolded and underlined:

1. A brake control unit for providing a brake output signal to a brake load of a towed vehicle, comprising:

a processor;

an accelerometer coupled to the processor, the accelerometer providing a brake control signal to the processor, wherein the processor is programmed to cause an appropriate brake output signal to be provided to the brake load responsive to the brake control signal;

and a memory subsystem coupled to the processor, the memory subsystem storing processor executable code which causes the processor to automatically acquire an operating point of the brake control signal **when the brake control unit is mounted within a range of operating positions.**

(‘993 Pat. at col. 10, ll. 5-23, ECF #38-5 at 13, Pg. ID 860; emphasis added.)

The principal dispute between the parties is whether the claim language requires that there be at least some mounting positions in which the brake control unit will not properly operate.

Hopkins argues that this claim limitation should be construed to mean that “the brake control unit must be installed within a limited range of orientations in the direction of travel.” (Hopkins Claim Const. Br. at 33, ECF #47 at 40, Pg. ID 1320.) At oral argument, Hopkins agreed that the wording “a limited range” in its proposed construction could be replaced with “a relatively wide but not unlimited range.”

(9/19/2016 Hearing Tr. at 139, ll. 10-14, ECF #57 at 139, Pg. ID 1993.) Hopkins' construction is based on its position that the '993 Patent is limited to an electronic brake controller having a single-axis accelerator and does not apply to an electronic brake controller having a dual-axis accelerometer. According to Hopkins, single-axis accelerometers have a limited range of operating positions, while dual-axis accelerometers have an unlimited range of operating positions.

Cequent argues that this claim limitation does not need to be construed. In the alternative, Cequent argues, if the Court believes a construction of this claim limitation is needed, that it should be construed to mean "when the brake control unit is mounted in a position where it operates." (Cequent Claim Const. Br. at 40, ECF #42 at 43, Pg. ID 1006.)

In the table below, the Court summarizes these two competing positions and summarizes the Court's construction of this disputed claim limitation:

Disputed Claim Limitations	Cequent's Proposed Construction	Hopkins' Proposed Construction	Court's Construction
"when the brake control unit is mounted within a range of operating positions."	No construction necessary; alternatively: "when the brake control unit is mounted in a position where it operates"	"the brake control unit must be installed within a limited range of orientations in the direction of travel"	There are at least some mounting positions in which the brake control unit will not properly operate.

The Court concludes that the claim language requires that there be at least some mounting positions in which the brake control unit will not properly operate. Specifically, the claim language states that the processor automatically acquires an operating point of the brake control signal “when the brake control unit is mounted within a range of operating positions.” (‘993 Patent at col. 10, ll. 6-22, ECF #38-5 at 13, Pg. ID 860.) By limiting the scope of the claim to “when the brake control unit is mounted within a range of operating positions[,]” the claim language contemplates that there are mounting positions in which the brake control unit will not properly operate. (*Id.*) In other words, the range of operating positions is not unlimited. The Court’s conclusion is supported by the written description section of the ‘993 Patent which states that the brake control unit has a “relatively wide” mounting range. (*Id.* at col. 4 ll. 14-20, ECF #38-5 at 11, Pg. ID 858.) By stating that the brake control unit has a “relatively wide” mounting range, the plain language of the ‘993 Patent implies that the range is not unlimited and that there are at least some mounting positions in which the brake control unit will not properly operate.

III

The Court construes the disputed claim limitations as set forth above. The Court reserves the right to modify its claim constructions as the infringement and validity issues of the Patents become known. *See Lava Trading, Inc. v. Sonic Trading Mgmt., LLC*, 445 F.3d 1348, 1350 (Fed. Cir. 2006).

IT IS SO ORDERED.

s/Matthew F. Leitman

MATTHEW F. LEITMAN

UNITED STATES DISTRICT JUDGE

Dated: January 26, 2017

I hereby certify that a copy of the foregoing document was served upon the parties and/or counsel of record on January 26, 2017, by electronic means and/or ordinary mail.

s/Holly A. Monda

Case Manager

(313) 234-5113